

В день Космонавтики сравним полёты первых космонавтов СССР и США

5-6 minutes

Three weeks after the triumphant flight of Yuri Gagarin, the American Alan Shepard flew into space. The American press began to write that the United States had reached parity with the USSR in the space race. But is it really so? Let's compare these two flights by Yuri Gagarin on April 12, 1961 and Alan Shepard on May 5, 1961.



Yuri Gagarin and Alan Shepard

Rocket "Vostok" with Yuri Gagarin was launched from Baikonur on April 12 at 9 hours 7 minutes Moscow time. A few minutes after the launch, the rocket reached its first space speed - 7.9 km / s. At the same time, Gagarin experienced a 5-fold overload.



Yuri Alekseevich Gagarin, 1961

Before Vostok, no rocket was powerful enough to move at that speed. Reaching an unprecedented speed, the spacecraft escaped the gravitational pull of the Earth and entered a circular orbit. At this speed, the satellite ship does not fall to Earth. It was assumed that the "Vostok" will enter a not too high orbit, up to 200 kilometers, make one orbit around the Earth and, braking the engine, will land near the city of Stalingrad. In the event of an unforeseen situation (for example, failure of the braking engine) due to deceleration against the higher atmospheric layers, the ship, gradually losing speed, would return back to our planet within ten days. And the life support systems on the spacecraft were also enough for ten days.



The flight of Yuri Gagarin on April 12, 1961

The Vostok spacecraft rose 100 km above the planned altitude. During the flight of the "Vostok" over Africa, the braking engine was turned on, and the spacecraft, sharply decreasing its speed, began to be attracted to the Earth. Gagarin experienced a 9-10-fold overload. When entering the dense layers of the atmosphere, the body of the device, due to friction against the air, heated up above 2200 °C, and the ablation shield began to burn. The landing took place in the Saratov region.

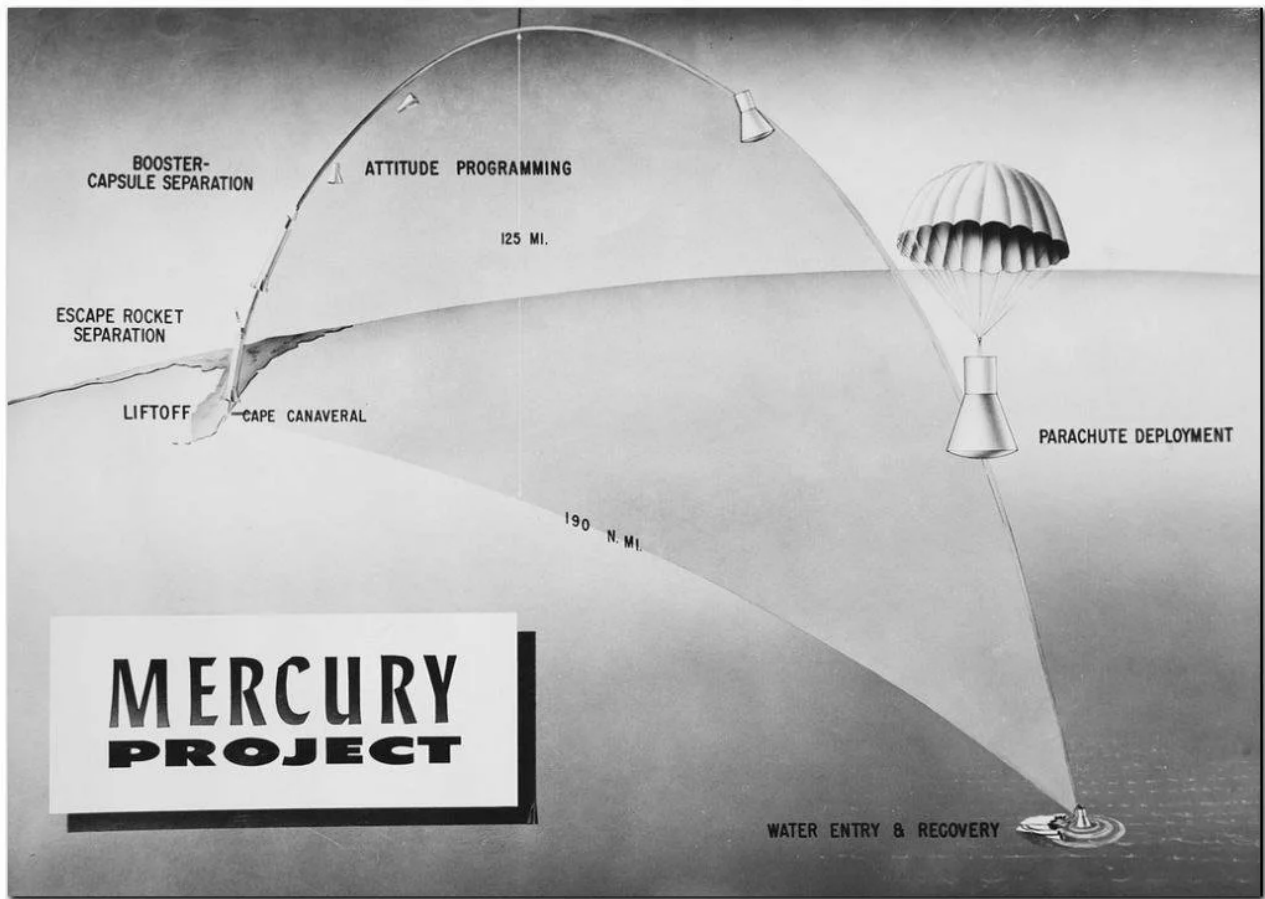


Flight trajectories of Yuri Gagarin and Alan Shepard.

The entire flight lasted 1 hour 48 minutes (108 minutes). The maximum ascent (orbital apogee) was 327 km.

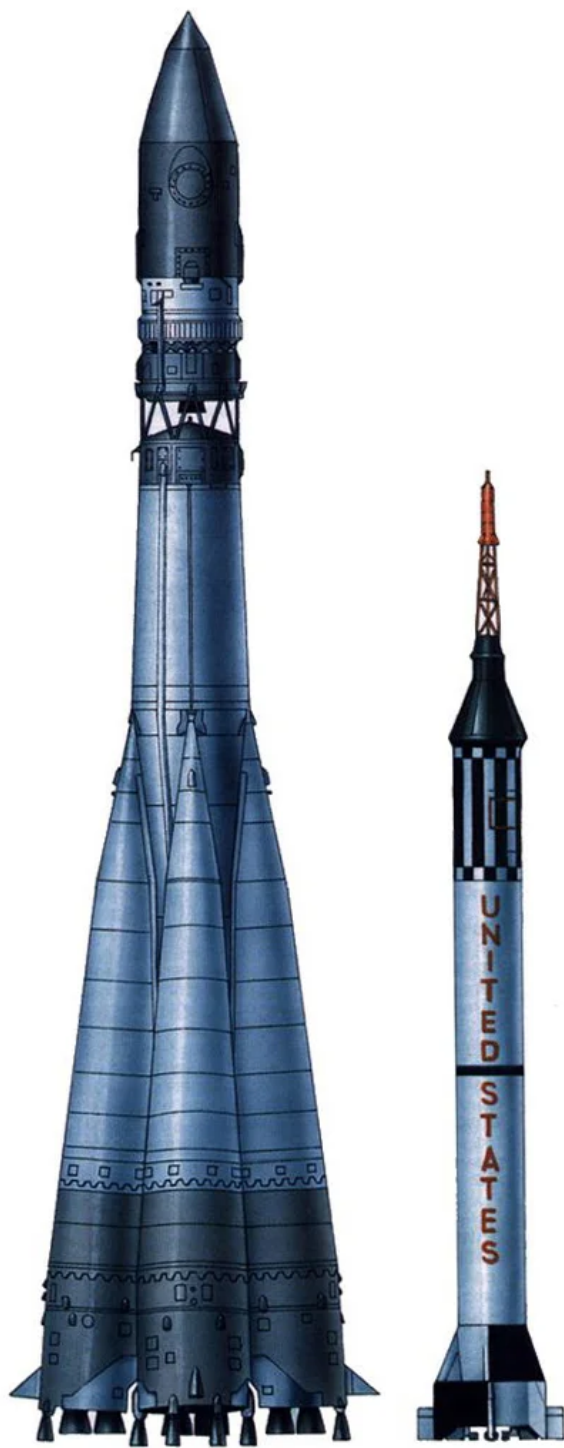


The flight of Alan Shepard lasted 15 minutes, it was the shortest flight into space in the entire history of astronautics (excluding emergency flights). The flight path of A. Shepard is shown in the figure above (on the map of the globe) in blue. The ballistic missile "Redstone 3", having overcome the boundary of the beginning of space (the Karman line, 100 km), brought the spaceship-capsule "Mercury Redstone 3" ("Freedom-7") into space for several minutes. The maximum speed reached by the spacecraft is about 2 km / s. With such a speed, the capsule did not enter orbit, but having risen up to 186 km, began to fall down. After about 486 km, she fell into the Atlantic Ocean.



Alan Shepard's flight on May 5, 1961.

Insufficient carrying capacity of American missiles led to the fact that the "Mercury" was very small and cramped, the volume was 3 times less than that of the "Vostok-1". The astronauts said they did not "sit" in the capsule, but "put it on themselves."



**Ракета-носитель «Восток»,
СССР, 1960 г.**

Стартовая масса -287 тонн,
длина - 38,36 м,
ширина
по стабилизаторам-10,3 м,
полезный груз - до 5.000 кг

**Баллистическая ракета
«Редстоун», США, 1961 г.**

Стартовая масса - 29,94 т,
длина - 25,41 м,
ширина
по стабилизаторам - 3,95 м,
полезный груз - 1.300 кг.

Comparison of missiles of the USSR (left) and the USA (right)

Shepard took his seat on the ship two hours before launch, at 5:15 a.m. ET ([Eastern Time](#)). But at 7 am the start was postponed for an hour due to cloudiness, then for another hour due to overheating of the inverter. The start was already delayed by two hours. There was a problem that neither the engineers nor the medics had thought about - for the flight, which was supposed to last only fifteen minutes, no one thought about the sanitary and hygienic needs of the astronaut. Simply put, there was no urine bag in the suit. More than four hours of waiting in a rocket resulted in the first American astronaut having to empty his bladder into a spacesuit. As a result, the start took place at 9:34 am ET. Classes were suspended in schools. The start was watched live by 45 to 70 million people.

By the way, the first toilets on US spacecraft appeared only in 1981.

According to Gene Krantz in Failure is Not Option, when reporters asked Shepard what he thought as he sat on top of the Redstone rocket and waited for takeoff, he replied, "The thing is, every part of this ship is built at the lowest price ".

So, comparing the flights of the first cosmonauts (who crossed the border of the beginning of space) in the USSR and the USA, it becomes clear that the Soviet Union has pulled out much ahead of the United States.

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Cameraman L. Konovalov was with you.

Until next time!

12 April 2020